

WHAT IS CLAIMED IS:

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1. A method for regenerating genetically modified plants of pine of the genus *Pinus* selected from the group consisting Southern yellow pines and hybrids thereof, which comprises selecting transgenic embryogenic pine cells in the presence of an agent that regulates differentiation of embryos from embryogenic cells.
2. The method of claim 1, wherein said Southern yellow pines are selected from the group consisting of *Pinus taeda*, *Pinus elliotii*, and *Pinus caribaea* and related pines.
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3. The method of claim 1, wherein transformed pine cells are cultured in the presence of said agent to select said transgenic embryogenic pine cells.
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4. The method of claim 1, wherein said agent that regulates differentiation of embryos from embryogenic cells is selected from the group consisting of abscisic acid (ABA), an osmoticum and a gelling agent.
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5. The method of claim 4, wherein said agent is ABA.
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6. The method of claim 4, wherein said agent is polyethylene glycol (PEG).
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7. The method of claim 4, wherein said agent is a gelling agent introduced into the selection medium in larger than normal quantities.
8. The method of claim 7, wherein said gelling agent is gellan gum.
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9. The method of claim 7, wherein the amount of gelling agent is between about 3% and about 5%.
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10. The method of claim 4, wherein said agent is a gelling agent introduced into the selection medium in less than normal quantities.
11. The method of claim 10, wherein said gelling agent is gellan gum.

12. The method of claim 10, wherein the amount of gelling agent is between about 0.5% and about 1.5%. *(16)*

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5 13. The method of claim 3, wherein said agent is selected from the group consisting of
abscisic acid (ABA), an osmoticum and a gelling agent.

14. The method of claim 13, wherein said agent is ABA.

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15. The method of claim 13, wherein said agent is polyethylene glycol (PEG).

16. The method of claim 13, wherein said agent is a gelling agent introduced into the selection medium in larger than normal quantities.

17. The method of claim 16, wherein said gelling agent is gellan gum.

18. The method of claim 16, wherein the amount of gelling agent is between about 3% and about 5%.

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19. The method of claim 16, wherein said agent is a gelling agent introduced into the selection medium in less than normal quantities.

20. The method of claim 19, wherein said gelling agent is gellan gum.

25 21. The method of claim 19, wherein the amount of gelling agent is between about 0.5% and
about 1.5%.

22. The method of claim 1, wherein said selection is performed by
culturing pine cells which have been subjected to transformation in the presence
of said agent;
contacting said cells with a selection agent; and
selecting transformed cells.

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23. The method of claim 22, wherein said selection agent is contained in a gel medium.

24. The method of claim 22, wherein said selection agent is contained in a layer and said cells are cultured on a support membrane is placed over said layer which is placed on a gel medium.

25. The method of claim 24, wherein said layer is a thin film of liquid medium.

26. The method of claim 24, wherein said layer is a filter paper with a liquid medium absorbed therein.

27. The method of claim 24, wherein said support membrane is prepared from a material selected from the group consisting of polyester, polypropylene and a liquid permeable fluoropolymer fabric.

28. The method of claim 22, wherein said transformed cells are cultured in the presence of said agent which is in said gel medium.

29. The method of claim 28, wherein said agent is ABA.

30. The method of claim 24, wherein said ABA is in said layer.

31. The method of claim 4, wherein said selection is performed by
culturing cells which have been subjected to transformation in the presence of
said agent;
contacting said cells with a selection agent; and
selecting transformed cells.

32. The method of claim 31, wherein said selection agent is contained in a gel medium.

33. The method of claim 31, wherein said selection agent is contained in a layer and said cells are cultured on a support membrane is placed over said layer which is placed on a gel medium.

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34. The method of claim 33, wherein said layer is a thin film of liquid medium.

5 35. The method of claim 33, wherein said layer is a filter paper with a liquid medium absorbed therein.

10 36. The method of claim 33, wherein said support membrane is prepared from a material selected from the group consisting of polyester, polypropylene and a liquid permeable fluoropolymer fabric.

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37. The method of claim 31, wherein said transformed cells are cultured in the presence of said agent which is in said gel medium.

38. The method of claim 37, wherein said agent is ABA.

39. The method of claim 33, wherein said ABA is in said layer.

40. The method of claim 22, wherein said transformation is transformation by *Agrobacterium*.

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20 41. The method of claim 40 which further includes the eradication of *Agrobacterium* following transformation.

25 42. The method of claim 31, wherein said transformation is transformation by *Agrobacterium*.

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30 43. The method of claim 42 which further includes the eradication of *Agrobacterium* following transformation.

44. A transgenic embryogenic pine culture prepared by the method of claim 1.

30 45. A transgenic embryogenic pine culture prepared by the method of claim 2.

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46. A transgenic embryogenic pine culture prepared by the method of claim 4.

47. A transgenic embryogenic pine culture prepared by the method of claim 13.

5 48. A transgenic embryogenic pine culture prepared by the method of claim 22.

49. A transgenic embryogenic pine culture prepared by the method of claim 31.

50. A transformed pine plant of the genus *Pinus* regenerated from transgenic embryogenic pine cells selected by the method of claim 1.

10 51. A transformed pine plant of the genus *Pinus* regenerated from transgenic embryogenic pine cells selected by the method of claim 2.

52. A transformed pine plant of the genus *Pinus* regenerated from transgenic embryogenic pine cells selected by the method of claim 4.

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53. A transformed pine plant of the genus *Pinus* regenerated from transgenic embryogenic pine cells selected by the method of claim 13.

54. A transformed pine plant of the genus *Pinus* regenerated from transgenic embryogenic pine cells selected by the method of claim 22.

25 55. A transformed pine plant of the genus *Pinus* regenerated from transgenic embryogenic pine cells selected by the method of claim 31.

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